PEACE/WILLISTON
FISH & WILDLIFE
COMPENSATION
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BRITISH
COLUMBIA

Mischinsinlika Foreshore
1995 Prescribed Burn

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The Peace/Williston Fish & Wildlife Compensation Program is a cooperative venture of BC Hydro and the provincial fish and wildlife management agencies, supported by funding from BC Hydro. The Program was established to enhance and protect fish and wildlife resources affected by the construction of the W.A.C. Bennett and Peace Canyon dams on the Peace River, and the subsequent creation of the Williston and Dinosaur Reservoirs.

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1.0 INTRODUCTION

In May 1995, a prescribed burn was conducted along the Mischinsinlika foreshore of the Williston Reservoir. The area was identified as a potential enhancement site during the 1992 inventory and evaluation of wetlands in the Parsnip River drainage (Martin 1992). The site was extensively matted with grass and was receiving only low to moderate use by Canada geese, mallards and American wigeons. Tall, mature grasses are compacted annually by winter snowfall and higher reservoir levels, thus forming dense mats of dead vegetation that inhibit the growth of lush, new vegetation.

Enhancement activities were proposed for the area since it could potentially support moderate to high use during spring and fall migrations, and during moulting and rearing periods. The aim was to enhance the Mischinsinlika foreshore habitat for waterfowl, particularly those species which feed on grass in upland habitats.

Controlled burning of such an area is thought to be an effective way of removing accumulated plant matter, thereby promoting the growth of desirable forage material for wildlife. Light broadcast burns remove surface vegetation without impacting the soil below Although burning has not been used before for this purpose in northern British Columbia (pers. comm. Murray Clark, Ducks Unlimited), burning has been used widely for rangeland management of grazing domestic and wild animals. This site was considered suitable for a low-risk prescribed burn because it had very little adjacent timber and had many features which could act as natural fire breaks. Early spring was identified as the best time to conduct the burn as fine fuels (e.g., grasses) are the first to lose their moisture content, while the ground and larger debris are still too wet to burn. In addition, most bird species have not yet begun using the site at this time of year.

The initial proposal to conduct a burn at the Mischinsinlika site by the Peace/Williston Fish and Wildlife Compensation Program (PWFWCP) was made to the Mackenzie Forest District (MFD) in the spring of 1993. A burn plan was prepared and submitted, and the site was investigated with MFD personnel. Burning, however, was canceled that year due to unforeseen circumstances (e.g., prolonged burn negotiations with the Forest Service and BC Environment, and limited PWFWCP finances resulting from the previous Pelly Lake burn). In 1994, the foreshore burn plan was resubmitted and approved by the MFD for the spring of that year. Preparations and pre-burn activities, including the establishment of a fire break, were conducted on 9 May 1994, but the burn was postponed due to high winds. Plans to conduct the burn were extended for the following week, but weather conditions and the advanced green-up of vegetation at the site postponed the burn again until the following year.

The purpose of this report is to document the prescribed burning activities conducted at the Mischinsinlika foreshore site in 1995

2.0 AREA DESCRIPTION

The burn area is situated at the southern end of the Williston Reservoir, at the confluence of the Parsnip River and Mischinsinlika Creek, 15 km south of Mackenzie (Figure 1). The site is relatively flat with a slope of 0-5% and a slight southwest aspect. The foreshore area is naturally divided into three sections by water channels traversing the site (Figure 2). The first section, a small island (1.3 ha) within the main Parsnip River channel, was designated as a pre-burn trial area since it had a very low risk of fire escape and had site characteristics similar to the main burn areas. The two main sections were identified as Areas A (7.1 ha) and B (58.7 ha). All sites were characterized by extensive matted grass interspersed with willow and old tree stumps - remnants of prior forest harvesting to remove trees from the reservoir inundation zone. Reservoir levels greater than 669 m (2195 ft) begin to inundate the foreshore area.

3.0 BURNING ACTIVITIES AND MONITORING

Under the Class A burning permit (#83626; effective period 5 May to 4 June 1995) granted by the Forest Service for the Mischinsinlika foreshore burn, an eleven-person crew was required along with specific on-site fire control equipment. The latter consisted of one Wajax Mark III water pump, 4 back-pack pumps, 2000 feet of hose, and sufficient shovels and polaskis for the crew. The crew included three PWFWCP staff members (biologists Fraser Corbould and Mari Wood, and technician Randy Zemlak), BC Environment biologist Glen Watts, two people from Baseline Prescriptions Ltd. (Prince George), and 5 volunteers from the Mackenzie Fish and Game Association (John Lambie, Vi Lambie, Bob Groseth, Albert Grattan, and G. Deitz). Bruce Armstrong, MFD Field Operations Supervisor, was also on site to issue the burning permit and monitor burning activities.

Though a majority of Areas A and B were bounded by water, pre-burn activities on the morning of 5 May involved the re-establishment of the handtool fire guard (created in 1994) at the north end of Area B (250 m long), and the building of a guard at the south end of Area A (100 m long; Figure 2). Fire guards consisted of a 4 m wide strip cleared of all shrubs and debris. Along the middle of these strips, a trench 30-50 cm wide was dug to the depth of the mineral soil, simultaneously removing any roots or logs that traversed the trench. Also, prior to burning, the pump and hoses were used to soak the trenches, as well as a 10 m wide strip outside the fire breaks, for more than 30 minutes.

The burns were conducted between 1400 and 1600 hours. Weather conditions recorded at 1300 hours from the MFD Fire Control Centre at the Mackenzie airfield indicated favourable burning conditions: easy site ignition, high ground moisture, and light winds (Table 1). Cloud cover was minimal with only some scattered cumulus.

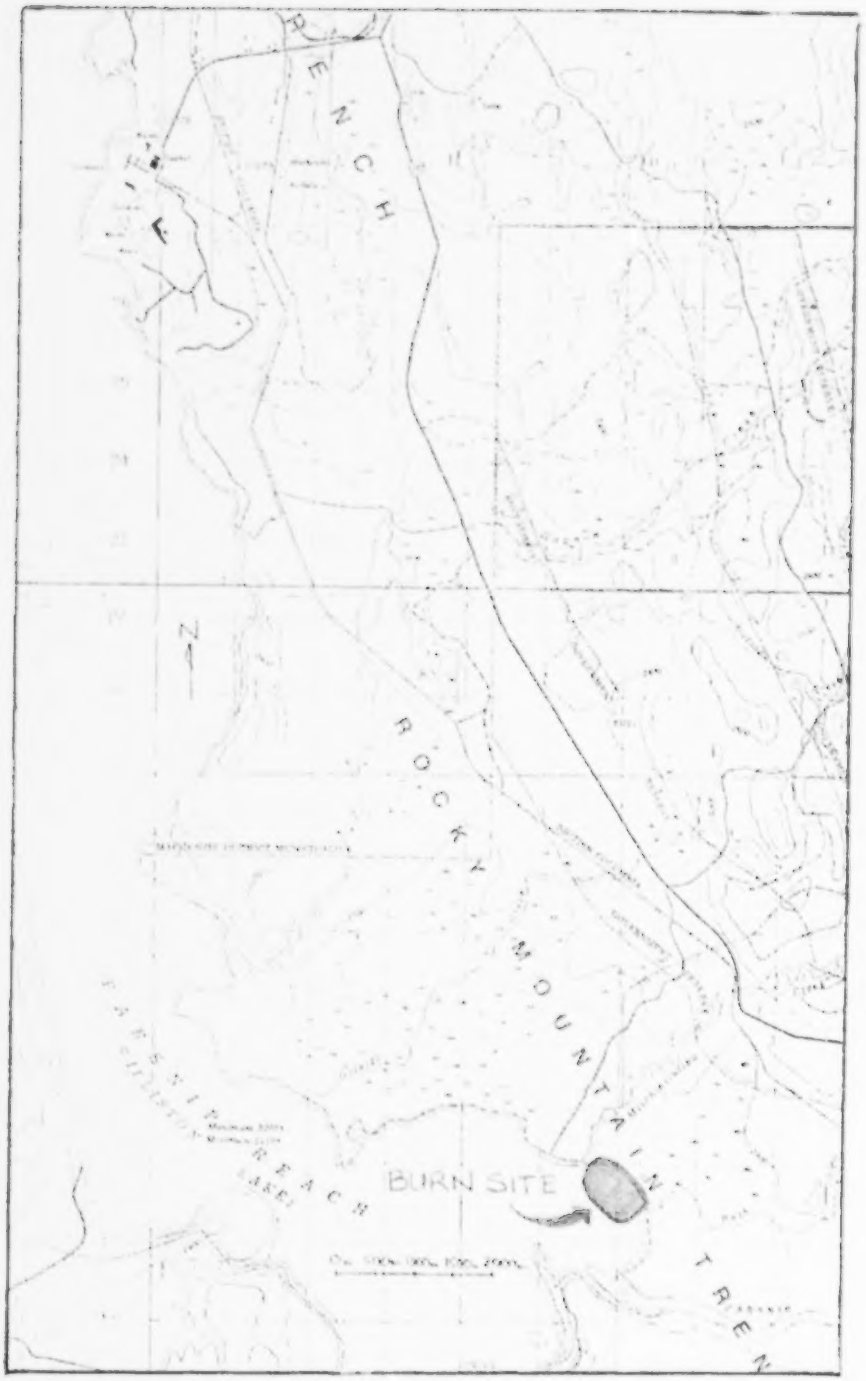

Figure 1. Mischinsinlika foreshore area (maps 93-0/3 and 93-0/6).

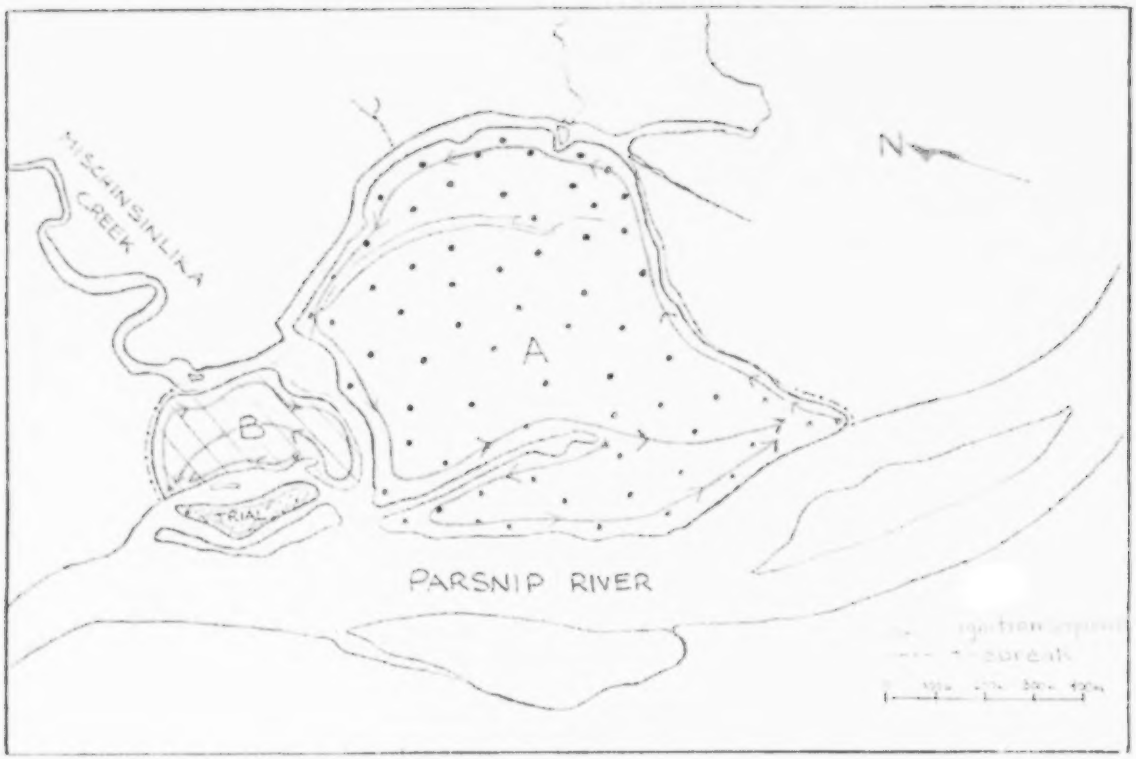

Figure 2. Mischinsinlika foreshore burn site: trial area, and Areas A and B.

Table 1. Weather conditions[a] at Mackenzie Forest District Fire Control Centre (Mackenzie airfield), 1300 hours, 5 May 1995.

FFMC	PMC	DC	DGR	Temp.	RH	Winds	Ppt.
88.5	37	77	moderate	15°C	36%	SW 10k/h	0.0mm

[a] FFMC (fine fuel moisture code); DMC (duff moisture code); DC (drought code); DGR (fire danger rating); Temp. (temperature); RH (relative humidity); Ppt. (precipitation).

Hand-held drip torches with an 80 diesel:20 gas fuel mix were used for site ignition. The trial island was ignited with a single drip torch by walking its perimeter in a clockwise direction from the northern tip. Ignition took approximately five minutes and the burn was completed (i.e., no visible flames, only a few smoldering stumps) within a further 10 to 15 minutes.

Satisfactory burning of the trial area was immediately followed by a precautionary back-burn along the fire guard of Area B. Two people used drip torches to ignite two parallel lines, 2 m apart, inside the perimeter of the burn area. Ignition of the entire area then proceeded with one person starting at the western corner of the fire break and walking in a clockwise direction along the perimeter to the southern corner before looping back to the starting point. The remaining area was then lit by igniting the western edge. The burn was complete within 30 to 45 minutes.

A precautionary back-burn along the fire break of Area A was initiated approximately 15 minutes after the back-burn of Area B was started. One drip torch was used to ignite a single peripheral line about 4 m inside the fire break boundary. This was immediately followed by ignition of the entire Area A. The perimeter was lit in a counterclockwise direction; the eastern two-thirds were lit as one unit with the remaining western portion being subsequently ignited. The main burn of Area A was completed in 60 to 90 minutes. The interior of Area A was then walked and portions that had not burned were ignited to eliminate any potential of later flare-ups.

A visual inspection of the site was carried out by crew members upon completion of the burns and hot spots (e.g., smoldering stumps) within 15 m of the perimeter edge for Areas A and B were extinguished. Fraser Corbould and the Baseline crew continued mop-up duties on 6 May, monitoring the burn areas and extinguishing any hot spots within 15 to 20 m of their perimeters. To satisfy burn permit requirements, the site was re-visited in subsequent days by at least one person until no smoke was visible; between 7 and 10 May, a member of the Mackenzie Fish and Game Association checked the site daily and reported smoke volume to the Fire Control Centre. Assessments were made during the mid to late afternoon when flare-ups were most likely to occur. No smoke was observed at the site on 9 and 10 May, therefore further monitoring was stopped.

On the morning of 16 May, an individual from the Mackenzie Forest District was conducting infra-red scanning of nearby logging-related burn sites. He also scanned the Mischinsinlika foreshore site and reported that numerous hot spots were present around the perimeter of Area B. PWFWCP and BCE staff were alerted; Glen Watts and Randy Zemlak immediately traveled to the

Mischinsinlika foreshore and investigated the site. No hot spots were observed around the perimeter of Area B. The following morning, a four-person crew (Fraser Corbould, Randy Zemlak, and Baseline employees) returned to Mackenzie. After meeting with Forest Service staff it was concluded that hot spot locations were misidentified. Actual hot spot locations were restricted to Area A, with the majority more than 175 m from the area's perimeter and none identified within 20 m of the edge. As a precautionary measure, the MFD extended the burning permit from 4 June to 31 December 1995, and ordered that any hot spots within 50 m of Area A's eastern boundary be extinguished. The crew remained on site until late afternoon, monitoring the area and extinguishing any hot spots as directed. The above-described activities and site status were subsequently reported to the MFD Fire Control Centre and no further mop-up activities were conducted.

Aerial observations of the site on 1 August 1995 indicated that regeneration of willow and grasses was occurring. Another on-site visit was conducted 31 August. At this time, the site was completely inundated as a result of high reservoir levels, and the area was being used extensively by mallards, American wigeons, northern pintail, green-winged teal, and Canada geese. A great blue heron and an American bittern were also observed In 1996 new willow shoots were reported to be growing on site, but there was limited grass growth (Rafuse, in prep.). Other vegetation noted includes alder *(Alnus* sp.), yellow rattle *(Rhinanthus crista-galli),* goldenrod *(Solidago canadensis),* hawkweeds *(Hieracium* sp.) and sedges *(Carex* sp.).

4.0 PROJECT COSTS

Other than staff wages and travel expenses, burning costs (totaling $1,500) were restricted to the contracting of the two-person crew and required equipment to conduct the burn. The resultant cost per hectare ($22/ha) is approximately a third of the costs observed for prescribed burning of ungulate winter range ($65/ha; Zemlak *et al,* in prep.).

5.0 CONCLUSION AND RECOMMENDATIONS

Prescribed burning proved to be an effective means of removing dead, matted grass over a large area, in a controlled manner. Compared with other forage enhancement techniques, it is also relatively inexpensive. Furthermore, the project provided an excellent opportunity to include volunteers in PWFWCP activities.

If further monitoring continues to indicate that foreshore waterfowl habitat has been ameliorated by the burn, then future burns should be conducted on other sections of the Williston Reservoir foreshore. Since tall grasses provide good nesting areas for upland nesting waterfowl (e.g., mallards, American wigeons, teals and Canada geese), and also provide cover habitat for several other wildlife species, the intent is not to burn all grassy sites. The objective is to create feeding sites adjacent to known nesting sites and at potential migration resting areas. A three to

five year burn rotation is recommended for optimum grass rejuvenation at any specific site (Yoakum *et al.* 1980). However, further monitoring of the Mischinsinlika foreshore should be conducted to ensure that such a burn frequency is appropriate for this site, and that soil conditions are not adversely impacted.

6.0 LITERATURE CITED

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